REMARKS

The Examiner's Office Action of April 24, 2003 has been received and its contents reviewed. Applicant would like to thank the Examiner for the consideration given to the above-identified application.

By the above actions, claims 1-4 and 6 been amended, and new claim 17 has been added. Accordingly, claims 1-4, 6, and 16-17 are pending for consideration, of which claims 1, 3, 4, and 17 are independent. In view of these actions and the following remarks, reconsideration of this application is now requested.

Referring now to the detailed Office Action, claims 1 and 2 stand objected to as indefinite. Particularly, the Examiner finds the language of "the boundary is a line between the active region and the isolating region, is small enough so that a breakdown ratio of the capacitance insulating film will have no practical problem" as nebulous. Further, the Examiner asserts that "the value" recited in claim 2 has no meaning or support in the instant application. In response, Applicant has amended claims 1 and 2, as shown above, to further clarify the claim language and to overcome the objection.

Claims 1, 3, 4, 6, and 16 stand rejected under 35 U.S.C. §102(b) as anticipated by Saito et al. (U.S. Patent No. 5,691,556 – hereafter Saito). Further, claim 2 stands rejected under 35 U.S.C. §103(a) as unpatentable over Saito. These rejections are respectfully traversed at least for the reasons provided below.

As recited in amended claim 1, a novel feature of the claimed invention resides in a ratio (S/L) of a total sum of exposed areas S of the electrode pad in the contact holes, with respect to a total sum of widths L of the lead conductive films on the boundary line between the active region and the isolating region, wherein the ratio is adjusted such that a breakdown ratio of the capacitance insulating film is zero (0) during plasma etching for forming the contact holes.

Saito, on the other hand, discloses an integrated circuit containing capacitor, wherein an active region and an isolating region (17) enclosing the active region is provided on a silicon layer (24) with an insulating film (22) on the active region with a boundary in contact with the isolating region (17). Saito also discloses an upper conducting plate (21) on top of the insulating film (22) with a portion over the isolating region being electrically continuous. It appears that the isolation region (17), silicon layer (24), upper conducting plate (21), and a

hole containing conductor 14 of Saito correspond to elements isolation region 14, silicon layer 12, upper electrode 21, and contact holes 18 of the Fig. 2B of the present application, respectively. However, Saito fails to disclose a ratio (S/L) of a total sum of exposed areas S of the electrode pad in the contact holes, with respect to a total sum of widths L of the lead conductive films on the boundary line between the active region and the isolating region, wherein the ratio is adjusted such that a breakdown ratio of the capacitance insulating film is zero (0) during plasma etching for forming the contact holes, as recited in amended claim 1.

As claim 2 depends from claim 1, the arguments set forth above in relation to the §102(b) rejection of claim 1 are also applicable t the §103(a) rejection of claim 2.

With respect to amended claim 3, a novel feature of this present invention resides in the active region in contact with the boundary portion including a region containing impurities having an oxidation enhanced diffusion effect, and the capacitance insulating film being formed by oxidizing the active region and having a larger thickness in the boundary portion than in other portions.

Turning back to Saito, according to Fig. 1 therein, the capacitance insulating film (22) appears to have a thickness at the boundary with the LOCOS oxide film (17) than at other portions. However, the active region in contact with the boundary portion does not include a region containing impurities having an oxidation enhance diffusion effect, such as shown in, e.g., Fig. 4 of the present application and as recited in amended claim 3.

Moreover, Saito fails to disclose the capacitance insulating film having a larger thickness at the boundary portion than at other portions due to the region containing impurities having an oxidation enhanced diffusion effect. Therefore, amended claim 3 distinguishes over Saito.

With respect to amended claim 4, a novel feature of the present invention recited therein resides in a total sum of exposed areas of the second active region in the second contact holds being smaller than a total sum of exposed areas of the electrode pad in the first contact holes.

On the other hand, according to the structure of the capacitor illustrated in Fig. 6 of Saito, the exposed area of the silicon layer 65 in the contact hole of the contact 66 is larger than the exposed area of the capacitance electrode 67 in the contact hole of the contact 68. In addition, according to the structure of the capacitor illustrated in Fig. 1 of Saito, the exposed

area of the silicon layer 20 in the contact hole of the contact 13 is smaller than the exposed area of the capacitance electrode 21 in the contact hole of contact 14. Applicant notes that both Figs. 1 and 6 of Saito are cross-section diagrams, and the quantity of contacts and the total sum of exposed area are not being considered.

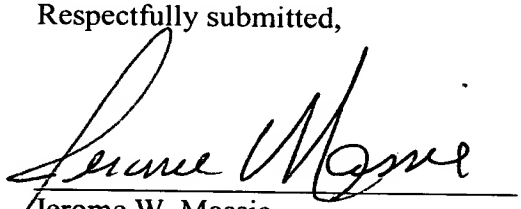
As set forth above, Saito does not disclose a total sum of exposed areas of the second active region in the second contact holds being smaller than a total sum of exposed areas of the electrode pad in the first contact holes, as recited in amended claim 4. Hence, claim 4 is clearly distinguishable over Saito.

New independent claim 17 has been added to further complete the scope to which Applicant is entitled. A novel feature of new claim 17 resides in a semiconductor substrate including an active region and an isolating region having a shallow trench isolation structure formed so as to enclose the active region, a capacitance insulating film formed on the active region and having a boundary portion in contact with the isolating region, and the capacitance insulating film having a larger thickness in the boundary portion than in other portions. These features are not disclosed in Saito.

In view of the amendments and arguments set forth above, Applicant respectfully requests reconsideration and withdrawal of all the pending rejections.

While the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise, which could be eliminated through discussions with Applicant's representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby by expedited.

Respectfully submitted,



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